IT IS CLAIMED:

1. A process for removing contaminants in a fluid stream, comprising

flowing the fluid stream in a first flow path over a catalyst to yield a first exit stream;

directing at least a portion of the first exit stream to an adsorbent bed positioned downstream from said catalyst, said directing continuing until a predetermined operating parameter is achieved; and

after said operating parameter is achieved, diverting at least a portion of said first exit stream to bypass said adsorbent bed for flow over said catalyst in a second flow path.

2. The process according to claim 1, wherein said diverting is achieved by a flow diversion member positioned between said catalyst and said adsorbent bed.

3. The process according to claim 2, wherein said diverting occurs when a preselected temperature in the adsorbent bed, in the catalyst, or both is reached.

4. The process according to claim 1, wherein said directing at least a portion of the first exhaust stream to an adsorbent bed yields a second exit stream, and said process further includes controlling the destination of said second exit stream.

5. The process according to claim 4, wherein said controlling comprises controlling the second exit stream so that all or a portion of the second exit stream is diverted to avoid flow over the catalyst in the second flow path.

6. The process according to claim 1, wherein said catalyst has a tube and shell structure, and said first flow path is through said tubes.

7. The process according to claim 1, wherein said directing continues until catalyst light-off temperature is reached and until desorption of a substantial

portion of adsorbed species on the adsorbent bed is achieved.

8. The process according to claim 1, wherein said directing continues until catalyst light-off temperature is reached, whereupon a first portion of the first exit stream is diverted to bypass the adsorbent bed and a second portion of the first exit stream continues to flow over said adsorbent bed.

9. The process according to claim 8, wherein the first portion of the first exit stream is a major portion and the second portion of the first exit stream is a minor portion.

10. The process according to claim 1, wherein said directing continues for a predetermined period of time, whereupon a first portion of the first exit stream is diverted to bypass the adsorbent bed and a second portion of the first exit stream continues to flow over said adsorbent bed.

11. The process according to claim 1, wherein said directing continues until a predetermined period of time has lapsed or until a predetermined temperature is reached, whereupon a first portion of the first exit stream is diverted to bypass the adsorbent bed and a second portion of the first exit stream continues to flow over said adsorbent bed.

12. The process according to claim 11, wherein said predetermined temperature is a selected catalyst temperature or a selected adsorbent bed temperature.

13. The process according to claim 12, wherein said selected catalyst temperature is measured at the point where the first exit stream exits the catalyst.

14. The process according to claim 1, wherein first flow path is crosscurrent to said second flow path.

15. The process according to claim 1, wherein first flow path is countercurrent to said second flow path.

16. The process according to claim 1, wherein first flow path is co-current to said second flow path.

17. The process according to claim 1, wherein said directing the first exit stream to an adsorbent bed forms a second exit stream that flows over said catalyst in said second flow path.

18. The process according to claim 17, wherein first flow path is crosscurrent to said second flow path.

19. The process according to claim 17, wherein first flow path is countercurrent to said second flow path.

20. The process according to claim 17, wherein first flow path is co-current to said second flow path.

21. A treatment system for a fluid stream, comprising

a catalyst having a first flow path and a second flow path, said catalyst positioned to receive a fluid stream in said first flow path;

an adsorbent bed positioned downstream from said catalyst and in fluid communication with said catalyst;

a first flow diversion member positioned to direct at least a portion of the fluid stream to or away from said adsorbent bed as the fluid stream exits said catalyst;

wherein the fluid stream is passed over said adsorbent bed until a predetermined parameter is reached, whereupon said flow diversion member is positioned to divert at least a portion of the stream away from said adsorbent bed and into the second flow path of said catalyst.

22. The system of claim 21, further comprising a second flow diversion member positioned downstream of said adsorbent bed for directing all or a portion of stream after passage over said adsorbent bed to or away from the second flow path of said catalyst.

23. The system of claim 21, wherein the predetermined parameter is selected from a temperature or a time period.

24. The system of claim 21, wherein the predetermined parameter is a temperature in the catalyst or in the adsorbent bed.

25. The system of claim 21, wherein the predetermined parameter is alternatively a time period or a temperature.

26. The system of claim 21, wherein said catalyst has a tube and shell structural configuration, with inner and outer tube surfaces operative for catalytic activity.

27. The system of claim 21, further comprising a temperature sensor positioned for monitoring the temperature of the exit stream.

28. The system of claim 27, wherein said valve position is changed in response to a preselected bed temperature sensed by said temperature sensor.

29. The system of claim 21, wherein said valve position is changed upon lapse of a preselected time period.

30. The system of claim 21, wherein said valve position is changed in response to a preselected bed temperature sensed by said temperature sensor.

31. The system of claim 21, wherein said first flow path is countercurrent to said second flow path.

32. The system of claim 21, wherein said first flow path is crosscurrent to said second flow path.

33. The system of claim 21, wherein said first flow path is co-current to said second flow path.

34. The system of claim 21, wherein said exit stream is a gas stream.